

WHAT IS CLAIMED:

1. An apparatus for treating tissue comprising:
 - 5 (a) an elongated member having a proximal end and a distal end;
 - (b) a plurality of electrically insulated elongated inner tubes, shafts, or conduits contained within and axially traversing the elongated member; each of said inner tubes, shafts, or conduits comprising a lumen;
 - 10 (c) a plurality of elongated independent electrode tines, each electrode tine extending through said inner tubes, shafts, or conduits wherein each said inner tube, shaft, or conduit has a single electrode tine extending therethrough, and wherein each electrodes tine is longer than the elongated member;
 - 15 (d) said tines being insulated proximal to the proximal end of the elongated member;
 - (e) the proximal end of each tine being connected to an energy source; and
 - (f) an actuator mechanism being connected to a segment of each tine.
- 20 2. The apparatus of claim 1 wherein said energy source is a source of radio frequency energy.
3. The apparatus of claim 2 wherein said energy source is an active rotating electrode which provides radio frequency energy in cyclic intervals.
- 25 4. The apparatus of claim 3 wherein the active rotating electrode is uniformly cycled among the tines.
5. The apparatus of claim 3 wherein the active rotating electrode contacts the terminal end of at least one tine for a longer duration than another tine.
- 30 6. The apparatus of claim 3 wherein the active rotating electrode comprises a single node.
7. The apparatus of claim 3 wherein the active rotating electrode comprises a dual node.
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8. The apparatus of claim 3 wherein the active rotating electrode comprises a multiple node.

5 9. The apparatus of claim 1 in which the elongated member has apertures which extend axially along the exterior wall of the elongated member into each of said inner tubes, shafts, or conduits; and said actuator mechanism being configured and dimensioned to axially move each tine independently to extend beyond the distal end of the elongated member or to retract each tine within said elongated member.

10 10. The apparatus of claim 9 in which the actuator mechanism comprises a number of side members, wherein each side member is connected to an individual tine through said apertures.

15 11. The apparatus of claim 10 in which said side members are solid arms attached to said tines at a substantially perpendicular angle.

12. The apparatus of claim 11 wherein said arms are manually pushed or pulled to extend or retract each individual tine from the distal end of the elongated member.

20 13. The apparatus of claim 1 wherein each tine is configured and dimensioned such that the distal ends of each tine substantially conform to an outwardly everted configuration when extended beyond the distal end of said elongated member and in a radially constrained configuration when axially retracted back within said elongated member.

14. The apparatus of claim 1 which further comprises an introducer for introducing the elongated member into the tissue.

30 15. The apparatus of claim 15 wherein the introducer comprises an obturator and sheath assembly, wherein the obturator may be removed from the sheath for receiving the elongated member.

35 16. The apparatus of claim 14 wherein the introducer comprises a self-penetrating element at the distal end of the elongated member.

17. An apparatus for treating tissue with radio-frequency energy comprising:

(a) an elongated member comprising a proximal end and a distal end;

(b) a plurality of elongated electrode tines extending through said elongated member

(c) the proximal end of each tine being connected to an independent electrode element in a radio-frequency distributor in which said elements are periodically contacted by an active rotating electrode which provides radio frequency energy in cyclic intervals.

18. The apparatus of claim 17 wherein each tine is configured and dimensioned such that the distal ends of each tine substantially conform to an outwardly everted configuration when extended beyond the distal end of said elongated member and in a radially constrained configuration when axially retracted back within said elongated member.

19. The apparatus of claim 17 wherein the active rotating electrode comprises a single node.

20. The apparatus of claim 17 wherein the active rotating electrode comprises a dual node.

21. The apparatus of claim 17 wherein the active rotating electrode comprises a multiple node.

22. A method for treating tissue using an apparatus comprising:

(a) an elongated member having a proximal end and a distal end;

(b) a plurality of electrically insulated elongated inner tubes, shafts, or conduits contained within and axially traversing the elongated member; each of said inner tubes, shafts, or conduits comprising a lumen;

(c) a plurality of elongated independent electrode tines, each electrode tine extending through said inner tubes, shafts, or conduits wherein each said inner tube, shaft, or conduit has a single electrode tine extending

therethrough, and wherein each electrode tine is longer than the elongated member;

(d) said tines being insulated proximal to the proximal end of the elongated member;

5 (e) the proximal end of each tine being connected to an energy source; and

(f) an actuator mechanism being connected to a segment of each tine.

23. A method for treating tissue according to claim 22 further comprising the steps of:

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(a) inserting the distal end of the elongated member into an area of tissue to be treated;

(b) independently extending or retracting each electrode tine to a desired position by moving the actuator mechanism of each tine; and

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(c) supplying energy to each tine from the energy source connected to the proximal end of each tine.

24. The method of claim 23 wherein the energy is radio frequency energy.

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25. The method of claim 24 wherein the radio frequency energy is supplied to each tine independently in cyclic intervals.

26. The method of claim 24 wherein the energy source comprises a distributor with an active rotating electrode.

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27. The method of claim 26 wherein the velocity of the active rotating electrode is from about 1 cycles/second to about 100 cycles/second.

28. The method of claim 27 wherein the active rotating electrode is uniformly
30 cycled among the tines.

29. The method of claim 27 wherein the active rotating electrode contacts the terminal end of at least one tine for a longer duration than another tine.

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30. The method of claim 26 wherein the active rotating electrode is selected from the group consisting of a single node design, a double node design, or a multiple node design.

5 31. The method of claim 23 wherein the area of tissue to be treated is a tumor.

32. The method of claim 31 wherein the tumor is a malignant hepatic tumor.

10 33. The method of claim 32 wherein the tines are deployed and positioned to substantially cover the entire volume, area, and shape of the tumor.

34. A method for treating tissue with radio-frequency energy using an apparatus comprising:

15 (a) an elongated member comprising a proximal end and a distal end;
(b) a plurality of elongated electrode tines extending through said elongated member;
(c) the proximal end of each tine being connected to an independent electrode element in a radio-frequency distributor in which said elements are
20 periodically contacted by an active rotating electrode which provides radio frequency energy in cyclic intervals.

35. A method for treating tissue with radio-frequency energy according to claim 34 further comprising the steps of:

25 (a) inserting the distal end of the elongated member into an area of tissue to be treated;
(b) extending or retracting the electrode tines to a desired position
(c) establishing a flow of radio-frequency energy to each tine independently
30 in cyclic intervals

36. The method of claim 34 wherein the velocity of the active rotating electrode is from about 10 cycles/second to about 100 cycles/second.

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37. The method of claim 34 wherein the active rotating electrode is selected from the group consisting of a single node design, a double node design, or a multiple node design.

5 38. The method of claim 35 wherein the area of tissue to be treated is a tumor.

39. The method of claim 38 wherein the tumor is a malignant hepatic tumor.

10 40. The method of claim 23 wherein the the distal end of elongated member is inserted into the area of tissue to be treated by first percutaneously inserting an obturator/stylet and sheath assembly, removing the obturator/stylet from the sheath to provide an access lumen, and then inserting the elongated member through the access lumen.

15 41. The method of claim 35 wherein the the distal end of elongated member is inserted into the area of tissue to be treated by first percutaneously inserting an obturator/stylet and sheath assembly, removing the obturator/stylet from the sheath to provide an access lumen, and then inserting the elongated member through the access lumen.

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